

A REVIEW OF THE SPECIES OF THE GENUS GYPONA
OCCURRING IN NORTH AMERICA NORTH
OF MEXICO (HOMOPTERA).

By E. D. BALL.

Germar founded the genus *Gypona* in 1821 for *Cercopis glauca* Fab. and its allies. Since that time 198 species have been described or referred to this group all from North and South America. Of this number over 100 have been named from North America.

The genus as a whole is composed of large broad and striking species of wide distribution but of comparative rarity in collections partly on account of their agility in avoiding capture and partly on account of restricted food habits. Most of the species are widely variable in size and structure and still more unstable in color. In several groups the males are usually strikingly and variably ornamented while the females are plain.

The majority of these so-called species have been described from single examples or single sexes and little attention has been given to previous work. Spangberg in 1878 in his *Species Gyponæ* lists 96 species, 55 of which were new, without listing a single synonym, but omitting 12 old species which he did not recognize. His keys and descriptions fail to recognize the difference between specific, varietal and only sexual characters. In later papers he added 41 more new species still without recognizing a single duplication or error in determination, indicating an adherence to the Walker cult of quantity rather than quality.

Gibson in 1919 published a brief synopsis of the North American forms in which he recognized the extreme variability in the reticulate veined group and brought most of the synonymy of *octolineata* Say together. His material in other groups was not as complete and he failed entirely to recognize the difference in color in sexes and the extreme variability in other species with the result that here the confusion was only increased. He placed much reliance on the presence or absence of black marks on the pronotum and hinges and used it in his keys with disastrous results. This character is widely and commonly variable in a number of species such as *rugosa*, *melanota* and *scarlatina*, and more rarely variable in many others.

The writer some years ago brought together all the then available material from the region of the United States, intending to publish a synopsis of this group following the same lines as his work on the *Tettigonidæ*. When the material was assembled it was painfully evident that there had been little or no biological work done on this group and that there were no carefully bred series on which to base a study of the limits of variation. Without such a basis it was evidently impossible to determine the specific limits in this chaos of names so the material was returned and the matter dropped except for the collection of biologic material at every opportunity.

The appearance of Gibson's synopsis with its many obvious errors of reference and synonymy, which if not speedily corrected will cause endless confusion, caused the writer to again look over the situation with reference to available material. A trip to the East, in which a half dozen collections including the National Museum were studied, showed that for at least three of the worst confused species that sufficient material was available so that these species could be properly characterized, the variations in the color and size of sexes correctly pointed out and a large part of the present confusion cleared up.

When it is remembered that the whole 198 names apply to a rather small number of species and that a very large part of the types of these so-called species are in European museums and the only possibility of determining their characters is through meager descriptions it will at once be evident that even though the species be correctly defined it may not be possible in every case to determine the oldest name that will finally apply to a given species. Some further changes in synonymy may therefore be expected when type studies are made. Fortunately or unfortunately, however, we shall have an abundance of names that certainly apply to a considerable number of the species.

Key to the Subgenera of the Genus Gypona.

- A. Vertex and front meeting in an acute angle, the margin more or less produced and foliaceous.
 - B. Venation more or less reticulate..... *Gyponana* nov.
 - BB. Venation not reticulate; 5 apical and 3 antepical cells.
 - C. Elytra without dots or lines in the areoles, front broad, our species green or black..... *Gypona* Germ.
 - CC. Elytra with dots or lines in the areoles, the front narrow, species cinereous or brown, never green..... *Prairiana* nov.
- AA. Vertex and front broadly rounding or with the margin thick and only slightly produced..... *Ponana* nov.

Subgenus *Gyponana* Nov.

Resembling *Gypona* in size and form, but with the venation of the elytra broken up into numerous irregular reticulations. Vertex broad, flat, meeting the front in an acute angle the margin foliaceous. Pronotum broad, transverse, striated, elytra elongate, narrowing apically, the appendix very narrow, entire apical area at least broken up into irregular reticulations.

Type of the subgenus *Gyponana octolineata* Say.

The more typical members of this genus are large, broad, green species, with more or less of scarlet or yellow striping. The amount of reticulation is very variable in some species, while quite constant in others.

Key to Species of Subgenus Gyponana.

- a. Costal margin of elytra with fine black dots; whole insect more or less peppered with scarlet and black points.1. *dracontea*, Gib.
- aa. Costal margin without black dots, whole insect green, often with red or yellow lines.
 - b. Elytra subhyaline smooth, vertex sloping, segment rounding, black spots wanting.2. *octolineata*, Say
 - bb. Elytra nearly opaque, strongly rugose, shining, vertex flat, female segment rectangularly emarginate, black spots on pronotum and hinge usually present.3. *rugosa* Spgb.

1. *Gypona (Gyponana) dracontea* Gib.

This small gray-brown species slightly superficially resembles a gray form of *Xerophlæa*. It is by far the smallest of the group in our fauna and is only known from Arizona.

2. *Gypona (Gyponana) octolineata* Say.

This is the commonest and most widespread species in our fauna occurring from Canada to Florida, and from Nova Scotia to California. It varies greatly in size, color and in amount of reticulation and may be divided into varieties as enumerated below. Its reticulate elytra will separate it from all other green species but *rugosa*, from which the almost straight segment and the striping will usually distinguish it. It is apparently a very general feeder on different shrubs and trees.

Var. *octolineata* Say.

Green, washed with scarlet with definite scarlet stripes and more or less scarlet on the heavy reticulations.

Say described this species from Missouri and fixed the name *octolineata* on this variety by describing the markings as scarlet

and extending on to the reticulations, while he made the form with yellow stripes a variety.

This variety probably occurs throughout the range of the species but is most abundant in the Atlantic coast region.

Var. **striata** Burm.

Gypona cana Burm.; *Gypona flavilineata* Fh.; *Gypona quebecensis* Prov.; *Gypona scrupulosa* Spgb.; *Gypona olivacea* Spgb.; *Gypona geminata* Osb.

Green with six more or less definite yellow stripes on vertex and pronotum. Reticulations very variable.

This form is the most common one throughout the wide range of the species. It was described from Pennsylvania. Burmeister was evidently not aware of Say's descriptions of *octolineata* at the time. *Gypona cana* Burmeister described for Carolina probably represents the heavily reticulate type. The peculiar genital structure described by Burmeister in connection with *cana* has not been found in any member of the genus and was probably based upon a mutilated specimen.

Var. **pruinosa** Spangb.

Examples of a pale, slightly reticulated and usually markedly pruinose variety occurring from Georgia to Texas are placed here.

3. ***Gypona* (*Gyponana*) *rugosa*** Spangb.

Gypona ramosa Kirk; *Gypona delicata* Fowl.

Yellowish green, elytra heavily reticulate, whole surface coarsely rugose shining. Female segment deeply rectangularly notched. Some examples show definite black spots on pronotum behind the eyes and definite pale lines. Others vary all the way from this to entirely wanting.

This very active species is found both as larvæ and adult on the burr and white oak from New York, Wisconsin and southern Colorado, south to Florida and Mexico, and west to Arizona. Gibson separates *ramosa* Kirk, on the black spots, but all gradations in this character are common; *delicata* of Fowler, is evidently an immature example of this species.

Subgenus ***Gypona*** Burm.

Very large broad leaf hoppers with long, flat vertices sharply angled with the front, the margin thin, and foliaceous. Venation constant, five apical and three antepical cells. Burmeister

placed *Cercopis glauca* Fab. as his first species and type of his genus. This is a South American species resembling *melanota* but much larger.

Key to the Species of Gypona Burm.

- A. Head broad, vertex rounding, species golden, green or black.
 - B. Broad and stout (*verticalis* excepted), with more or less of black in the males, not confined to the appendix and with black dots on pronotum.
 - C. Vertex short, ocelli closer to eyes than to each other. Dull green, usually with more or less black on median dorsal line.
 - 1. *dorsalis* Spgb.
 - CC. Vertex longer, ocelli equidistant, males frequently shining black.
 - D. Stout, elytra short, female dull green, male green or shiny black, elytra often hyaline.....2. *melanota* Spgb.
 - DD. Slender, elytra long, parallel, female golden, male gold and smoky to shining black.....3. *verticalis* Stal.
 - BB. Species smaller, golden, green or testaceous, without markings except sometimes a smoky line on appendix.....4. *unicolor* Stal.
- AA. Head narrow, vertex angulate, ocelli nearer each other than eye, species pale, no spots or markings.....5. *angulata* Spgb.

1. *Gypona dorsalis* Spg.

Gypona dictitoria Gib.

Big broad, green, unmarked or with variable irregular dark spots and marks mostly confined to the median line, often a pair of round black spots just behind the ocelli, irregular angular markings on scutellum and numerous smaller ones along scutellar and sutural margins of elytra. The dorsum of the abdomen may be dark at the base.

This species occasionally has a few reticulations near the tip of the elytra, but the stout body, shorter vertex and dark markings will separate it from the species of *Gyponana*, while the broadly produced median lobe between two acute, lateral ones of the female segment will separate it from all others. Spangberg described *dorsalis* from Mexico, while Gibson described it again from Arizona examples. The writer has examples from New Mexico and Arizona. It is probably confined to the Southwest. Gibson places *dorsalis* as a synonym of *angulata* with a question. They are, however, very distinct as originally described, *dorsalis* being twice as wide as *angulata*.

2. *Gypona melanota* Spangb.

Gypona bipunctulata Woodw. (not Gibs.); *Gypona nigra* Woodw.; *Gypona bimaculata* Gib. (not Spangb.); *Gypona unicolor* Gib. (not Stal).

This is the broadest and shortest of our leafhoppers. Female pale green, unmarked except that they sometimes have a pair

of round black spots on the pronotum back of the eyes and another pair on the hinges. Males varying from entirely shining black to partly black, with milky subhyaline elytra, the black abdominal markings showing through, or in extreme cases entirely pale green, like the females. The female segment is nearly truncate and the male plates are broad and short.

This species is fairly common from Massachusetts to New York and Georgia, west to Minnesota, Iowa and Kansas and almost to the Rocky Mountains in Colorado. It is never found in trees or in shrub-covered areas. It is so heavy bodied that it does not fly readily. The writer has frequently found both sexes, together with the green larvæ in areas of prairie grasses. As there is no other species in this region closely related to this, there can be no question about the relation of the five color varieties of males. Osborn and Ball pointed this out in '97, but both Van Duzee and Gibson have ignored it.

Spangberg described the species from males from New Jersey and Georgia. Either he did not have the female or else confused it with some other species. Woodworth, ignorant of Spangberg's work, described each sex separately. The writer has examined the examples in the Illinois collection and found the above synonym to be correct. Gibson, not recognizing the relation between the sexes, identified the females without black spots as *unicolor*, those with spots as *bimaculata* Spgb. and the dark males as *melanota*. The true *bimaculata* Spgb is, however, evidently the female of the next species and not of this one, and while the real status of *unicolor* is somewhat doubtful, it cannot apply to this species.

3. *Gypona verticalis* Stal.

Gypona mexicana Spangb.; *Gypona bimaculata* Spangb.; *Gypona unicolor* var. *nigrodorsalis* Spangb.; *Gypona nixabunda* Gibs.; *Gypona germari* Stal.

Smaller and much narrower than *melanota*, females resembling *rugosa*. Golden green or yellowish. The females and light males agree in having round black spots on pronotum and black marks on hinge. The males vary from golden green to smoky or shining black, with about five varieties as in *melanota*.

This Rocky Mountain species may be readily separated from its eastern relative by the much narrower and nearly parallel margined appearance, by the golden shade on all but

the darkest males, as well as by its structural characters. The writer has found this species feeding abundantly both as larvæ and adult on the snowberry *Symphoricarpos* sp., in the mountain regions of Colorado. Examples are at hand from New Mexico and Arizona and various places in Mexico south to Vera Cruz.

This and the preceding species need not be confused, as their ranges and food plants are apparently quite distinct. Both species usually carry the black spots on pronotum and hinge but only *verticalis* shows traces of the yellow stripes and that rarely. There has been much confusion and synonymy in this species due to its wide variability. Stal described it twice, both times from males. Spangberg described each sex as a distinct species. Fowler in the *Biologia* described them separately while Gibson added to the confusion by wrongly identifying *bimaculata* and re-describing the green female as *nixabunda*, listing only the dark males as *verticalis*.

Gypona germari Stal is probably the light form of this species. As noted below, Fowler, however, evidently figures and described *angulata* under this name in the *Biologia*, although the two species belong to widely different groups.

4. *Gypona unicolor* Stal.

Gypona unicolor Stal (not Gibs).

The species here listed as *unicolor* is small, compact, pale green without markings except for a slightly smoky shade on the appendix. It is smaller and less parallel in form than *verticalis*, from which it is also distinct by the truncate segment and wide ocelli. The writer took this species in considerable numbers from the clumps of dwarf oaks growing on the mesas at Dolores in Southwestern Colorado and has specimens from Williams, Arizona and Mexico. As noted above Gibson's specimens labeled *unicolor* were all green forms of *melanota* without the black spots. These could not be Stal's species by either description or known range. Stal described *unicolor* as between *verticalis* and *germari* which are probably only color variations of the same species and when the types are critically studied, *unicolor* of Stal may prove to be only the green form of *verticalis*. The present species, however, appears to be distinct in structure, food plant and habit and answers the description in every way. Fowler notes that there is a specimen from Colorado in the Vienna Museum.

5. *Gypona angulata* Spangb.

Gypona tenella Spgb.; *Gypona germari* Fowl. (not Stal).

The angled vertex, together with the elongate form render this a strikingly distinct species. Superficially it resembles the paler forms of *striata* but lacks the reticulations.

The writer has taken it quite freely on the loco weed (*Oxytropis lambertii*) in the foothills of the Rockies in Colorado and has examples from British Columbia to Vera Cruz, Mexico. This species was described from a male from Texas. Later Spangberg described *tenella* from both sexes from Georgia. No material has been seen that indicates that there are two species in our fauna, and there is nothing in the original description that would separate them.

Gibson places *dorsalis* as a questionable synonym of this species although it was described as twice as broad as *angulata* with an entirely different head.

Subgenus **Prairiana** nov.

Resembling *Gypona* but with a much narrower and longer front and small, widely separated eyes. Vertex flat, elongate nearly equalling the pronotum, angulate, meeting front in a thin, foliaceous margin, ocelli on the disc distinctly in front of eyes. Front narrow and parallel margined in typical examples, often twice longer than wide. Antennal sockets close to front. Species pale gray to brown, entirely peppered with fine fuscous points which margin the nervures of the elytra. Darker examples may have linear markings in the areoles.

Type of the subgenus *Prairiana cinerea* Uhl.

The obscure and uniform coloration of this group is striking and probably an adaptation to the color of the dead grass blades around the margins of the clumps under which they live.

Key to Subgenus *Prairiana*.

- A. Ocelli farther from eyes than from each other, elytral areoles with dark margins, central markings faint or wanting.
 - B. Front narrow, almost parallel, twice as long as its antennal width, vertex long, convex, irregular. Markings in areoles obscure or wanting, nervures margined with black punctures. 1. *cinerea* Uhl.
 - BB. Front wider, less than twice as long as its width. Vertex shorter. Marking in areoles definite, especially in the male. 2. *miliaris* Stal.
- AA. Ocelli farther from each other than eyes. Antennal sockets touching eyes. Elytral areoles heavily marked with irregular brown areas and faintly margined. 3. *fraudulenta* Spgb.

Gypona (Prairiana) cinerea Uhl.

Uhler described this species from a rather small stout example from Manitou, Colorado. It, however, occurs in a number of quite distinct varieties. They all agree in possessing the long, flat, angulate vertex, the very narrow parallel margined front and the cinereous color with the fine dark punctures. Beyond this they are remarkably distinct and at first would be regarded as extremely well marked species in both size and form. It is possible that the extreme forms *ponderosa* and *subta* may be distinct but in so variable a group it is best to await good life history studies before erecting distinct species when varietal descriptions will serve every purpose and avoid confusion. Gibson refers *cinerea* to the extreme Southwest, but specimens have been examined from Montana, Colorado, Dakota, Kansas, Iowa and Illinois. It is probable that most if not all of the eastern references should be transferred to the next species. This species has never been taken in the mountains and is probably strictly limited to the "short grass" regions.

Gypona (Prairiana) cinerea var. *ponderosa* n. var.

Resembling typical *cinerea* but larger and much broader and heavier. The vertex is so broadened that the apex is broadly rounding rather than angulate. The elytra only equal the abdomen as in typical *cinerea*. The coloration is that of *miliaris* females with the black points back of ocelli large and distinct, the pronotal pits back of these deep and fuscous marked. There are slight fuscous markings in many of the elytral cells. Length of females, 11 mm.; width, 4 mm.

Described from a single female taken by the writer in a meadow on the plains east of Greeley, Colorado.

Gypona (Prairiana) cinerea var. *kansana* n. var.

Resembling *cinerea* but with long narrow parallel elytra and definitely angled vertex. Pale cinereous, finely punctured, the males inclined to be smoky. Length, 9 mm.; width, 3 mm. Described from four examples from Onaga, Kansas, collected by Crevecoeur. This is apparently the most common variety of the species. The writer has collected it sweeping over prairie grass in Colorado and Iowa and Crevecoeur took it abundantly

in Kansas. *Gypona spreta* Fowl seems to be another variety of *cinerea* with a still longer and more sharply angled vertex than *kansana*.

***Gypona (Prairiana) cinerea* var. *cinerea* Uhl.**

Stout gray or smoky cinereous forms with the elytra slightly longer than the body in the females, distinctly folded and narrowing posteriorly giving a stout, short form. The males have slightly longer elytra but are much shorter and stouter bodied than var. *kansana*. This variety has been taken from Colorado and Montana, east to Iowa. Most examples have been swept from upland prairie grasses.

***Gypona (Prairiana) cinerea* var. *subta* n. var.**

Resembling variety *cinerea*, but much smaller and shorter with short rounding elytra exposing the apical segment of the abdomen. These appear to be true brachypterous forms with the appendix wanting and the apical cells rudimentary, but the under wings are as long or slightly longer than the elytra and these forms may make short flights. The females are cinereous, quite heavily irrorate with fuscous, while the males are still darker, appearing in extreme cases as smoky. Length, females, 5-6 mm.; males, 5 mm.

Described from two pairs from Fort Collins, Colorado. Taken by the writer from under the clumps of *Schedonnardus texanus*, a "short grass" clump common on the plains. The larvæ were taken into the laboratory in May. The adults emerged in late May and June. This is remarkably early for this group and appearance might be taken to indicate two generations, but is probably only an adaptation to the early maturity of the buffalo grass and the other short grasses. This variety is quite remarkable in the whole *Gypona* group and superficially resembles an *Acocephalus* or even a *Penthemia*. When compared with the giant variety *ponderosa* it looks like a veritable pigmy. One wonders whether both size and early maturity are not adaptations to "short grass" conditions.

2. *Gypona (Prairiana) miliaris* Stal.

Gypona fraterna Spangb.; *Gypona negotiosa* Gibs.

This species resembles *cinerea* in general form and like that species is widely variable in size and color. The vertex is

shorter and less angled and the front is distinctly shorter and broader. The females are usually much longer and lighter colored than the males, grayish cinereous with minute fuscous spotting. The males are usually heavily irrorate, with fine brown points on vertex and pronotum, while the elytra are brown with the veins lighter and milky spots irregularly distributed in the cells.

This species occurs along the Atlantic and Gulf coast from Connecticut to Texas and Mexico. It does not seem to be a common species far inland, except possibly in the South. A single male from Chicago has been examined. It is probable that the eastern records for *cinerea* all belong to this species and that these two species scarcely if at all overlap in range.

3. *Gypona* (*Prairiana*) *fraudulenta* Spangb.

Gypona marmorata Fowl.

Resembling *miliaris* in general form, but with the ocelli widely separated, and the antennal sockets touching the eyes. Golden yellow, heavily ornamented with brown and fuscous as follows: A line under the vertex margin, a pair of round spots on the vertex behind the ocelli, irregular markings on the anterior portion of the pronotum, two lines on the scutellum and irregular lines in the areoles. A single female from Glen Echo, Maryland, is at hand.

This species is somewhat intermediate in character between *Gypona* and *Prairiana*, but until the whole group is worked up and its affinities established, it should remain in the latter genus.

Spangberg, page 59, of *Species Gyponæ*, describes a species as *marmorata* that is quite different from the one Fowler described so his name would fall in any case.

Subgenus *Ponana* n. sub. gen.

Resembling *Gypona* in general appearance, the body inclined to be cylindrical rather than so definitely flattened. Vertex often much shorter than wide, usually convex, with a rather definite depression before the thickened anterior margin, which is usually indicated above and below, but not produced more than its own width. Vertex and front meeting in nearly a right angle. Ocelli on the disc before the middle. Elytra long and narrow, closely folded. Venation regular.

Type of the subgenus *Gypona* (*Ponana*) *scarlatina* Fitch.

This genus includes a larger number of the blunt headed members of the old genus *Gypona*. The depressed vertex and the thickened margin between vertex and front will at once separate these forms.

Key to the Species of Ponana.

- A. Vertex moderately long and narrow. Species frequently sprinkled with sanguineous.
 - B. Elytra unmarked or with few markings in areoles and those mostly transverse.....1. *scarlatina* Fh.
 - BB. Elytra with numerous markings in the areoles either dots or lines parallel with the nervures.
 - C. Elytral nervures margined with fine dots.
 - D. Small species with head short.....2. *curiata* Gib.
 - DD. Species long and narrow, with larger head...3. *dohrni* Stal.
 - CC. Elytral nervures not margined with dots.
 - E. Fuscous dots numerous.....4. *sanguinolenta* Spgb.
 - EE. Sanguineous markings only.....5. *irrorata* Spgb.
- AA. Vertex broad and short ocelli well before the middle.
 - F. Nervures light margined with brown ocelli definitely back of margin. Pronotum brown with numerous spots on anterior margin.
 - 6. *marginifrons* Fowl.
 - FF. Nervures brown. without margins. Ocelli against the rounding margin. Pronotal spots only behind eyes.....7. *resima* Fowl.

1. ***Gypona* (*Ponana*) *scarlatina* Fitch.**

This species which Fitch described briefly but accurately in 1851 is one of the most variable of the North American forms, both in color and markings. It varies from almost black to a very light green through shades of olive, brown and scarlet and with equal variation in spots and marks in such numerous patterns that it has been described at least 21 times.

Through all this variation it is a moderate sized active species with a rounding vertex, longer in the middle than against the eye, a definite margin except in the pale forms. The ocelli are before the middle and considerably farther from each other than from the eye. The female segment is very slightly produced and scarcely sinuated. While the male valve is very large, rounding posteriorly with a definite medial callosity back of the margin and often a median carina. The plates are long, separate, curved somewhat like corn husks. They extend at an angle from the pygofer and thus open to view two caliper-like hooks. This and the large ivory posterior lobe of the scutellum are the two most constant characters in the species. The dark markings when present in the elytral areoles are unique in

being inclined to be transverse lines and the spots on pronotum are nearer the anterior margin than those in the preceding groups. While intermediates of various kinds occur, the great majority of the examples fall readily into the following varieties.

Var. **limbatipennis** Spangb.

Gypona albimarginata Woodw.

Vertex and pronotum fulvous, the narrow posterior margin of the pronotum and all of scutellum and elytra, except the narrow creamy costal margins, smoky brown or black.

Spangberg described both sexes from Illinois. The writer has taken dark nymphs from the base of buttercups in a damp meadow in Iowa and obtained this species from them. Dr. Marshall has taken it in Wisconsin and Gibson reports it from New York. This form seems to be the rarest and shades out into var *pectoralis*.

Var. **pectoralis** Spangb.

Gypona hullensis Prov.; *Gypona bimaculata* Wood.; *Gypona woodworthi* Van D.

Pale greenish yellow, the scutellar disc creamy, an indefinite smoky band arising on posterior margin of pronotum and extending to apex of elytra. A number of irregular black dots on elytra, including a larger and fairly definite pair just back of the center of the disc. A pair of round spots back of ocelli on base of vertex and another pair just behind them are usually faintly outlined in brown. As these spots increase in size and numbers it shades off into var. *puncticollis*.

This is the commonest form of this species throughout the upper Mississippi Valley and extends east to Ontario and the New-England States. The writer has taken the brown nymphs commonly from the water sprouts and lower limbs of basswood trees in Iowa and Wisconsin.

Woodworth described a specimen in which the smoky shade had a slightly reddish tinge as *bimaculata*.

Var. **scarlatina** Fitch.

Gypona modesta Spgb.

Pale yellow with a smoky or reddish cast. A number of irregular spots on the disc of the elytra. More or less of scarlet spotting on whole dorsal surface.

This variety is close to *pectoralis*. It is, however, readily separated by the absence of the smoky band and the presence of the scarlet spotting.

Var. **rodora** n. var.

Gypona meditabunda Gib. (not Spgb.)

Uniformly pale reddish above and below, with the usual spots on the disc of elytra. The nervures are reddish instead of irregularly smoky as in *pectoralis* and *scarlatina*. There are sometimes traces of scarlet spotting on vertex and pronotum.

. Described from a pair from Washington, D. C. Others are at hand from New Jersey.

Var. **puncticollis** Spangb.

Gypona quadrinotata Spangb.; *Gypona albosignata* Uhl.; *Gypona proscripta* Fowl.; *Gypona hieroglyphica* Fowl.; *Gypona notula* Fowl.

Pale yellowish with reddish cast emphasized on the elytra. A pair of round black spots back of ocelli on pronotum, a pair near each lateral margin behind the eyes, the outer ones larger and a pair on the elytral hinges. The usual spotting on disc of elytra and the narrow line on posterior margin of pronotum. Scarlet spotting often present.

This form replaces *pectoralis* and *scarlatina* in the south and southwest and occurs north to Kansas, Ontario and New York.

Var. **vinula** Stal.

Gypona vinula var. *ornata* Fowl.; *Gypona propior* Fowl.; *Gypona tergata* Fowl.

Pale greenish yellow with the spots and markings of *puncticollis* and with more or less definite smoky or reddish stripe extending from the scutellar margin down the suture to the apex of the elytra. This is a southern form, extending from Virginia and Florida to Vera Cruz, Mexico. It also resembles and intergrades with *pectoralis*, but is usually smaller and like the other southern forms inclined to a more inflated head.

Var. **citrina** Spangb.

Gypona pauperata Spgb.

Almost uniform yellowish with a few black spots on the disc of elytra and sometimes faint ones on pronotum. *G. pauperata* was described from an example with scarlet spotting.

This is a southern form, common in Florida and Texas and extending up the Atlantic coast as far as Washington, D. C.

Var. **meditabunda** Spgb.

Gypona cacozela Gib.: *Gypona occlusa* Gib.

Greenish or greenish yellow with the costal margin of elytra creamy and the appendix smoky brown. The hinge has a

black spot in both sexes. The males sometimes have the two median black points on pronotum and a few on disc of elytra. The head is similar to that in *citrina*, but shorter with the margin even more rounding in some examples.

Spangberg described this form from Texas and gave its color as greenish yellow with a brown appendix. He compares it to *flavicosta* Stal, which has a very short head. Gibson placed this name on a reddish form apparently common in Maryland and New Jersey (see var. *rodora*) and described the true *meditabunda* as *cacozela* and again as *occlusa*, but separating them in the key by the absence of the spot on hinges in *cacozela*, but in the descriptions he gives "elytra with base of clavus darkened" in both cases. As has been shown above, this character is widely variable. All the examples of this form seen have been from Texas. The writer has three examples from Brownsville and one from San Diego, Texas, while all of Gibson's material was from Brownsville.

2. *Gypona (Ponana) curiata* Gib.

A small, dull brownish species with blunt head, faint markings on elytra and the nervures bordered with fine punctures.

Gibson's material was from Arizona.

3. *Gypona (Ponana) dohrni* Stal.

Gypona punctipennis Stal.; (?) *Gypona bisignata* Fowl.; (?) *Gypona reservanda* Fowl.; *Gypona aquila* Gib.

A long, slender testaceous or grayish brown species superficially strikingly resembling *Phlepsius majestus* Osb. and Ball. The front is transversely lined with brown, the vertex is almost parallel margined, the ocelli are before the middle and twice farther from each other than from the eyes. There are black spots behind the ocelli, pot-hooks and spots on the anterior sub-margin of the pronotum. The elytra are long, narrow and inscribed with fuscous marks in the cells, with one or two larger ones behind the middle, while the nervures are margined with fine fuscous dots.

Examples are at hand from Grand Junction, Colorado, the Huachuca Mountains, Arizona, and Stal described it from Mexico. It is probably confined to the Rocky Mountain region. Fowler did not recognize either of the Stal species, but apparently described it twice.

4. *Gypona* (*Ponana*) *sanguinolenta* Spgb.

Gypona grisea Spgb.

Resembling *dohrni* in general appearance, but with a slightly longer flatter vertex and lacking the marginal punctures to the nervures. There are two median punctures on the claval veins, fuscous. The posterior half of pronotum thickly and the areoles sparsely irrorated with brownish points.

Spangberg described this species from Texas and Georgia. It has since been taken as far north along the coast as Pennsylvania and Massachusetts. Spangberg based the difference between *grisea* and *sanguinolenta* upon the latter having the scarlet flaking, a character in which all variations occur in several species.

5. *Gypona* (*Ponana*) *irrorella* Spgb.

Gypona scarlatina Gib. (not Fitch); *Gypona grisea* Gib. (not Spgb.)

This species resembles *sanguinolenta* in form and structure but lacks the dark markings of that species. In place of other markings the entire dorsal surface is irregularly flaked with scarlet.

This is a southern species occurring from Texas north and east on the Atlantic coast to Massachusetts but in the interior apparently south of the Ohio River line to Kansas.

Gibson identifies northern examples of this species as *scarlatina* Fitch and refers to a "Fitch type." This type was undoubtedly one of the many "Fitch types" in the National Museum that are not true to type at all in either characters or labels. The writer recently examined the Fitch types at Albany and found that practically all the material of his catalogue was still intact and except for some fading answered perfectly to description and label. Gibson apparently overlooked the fact that Fitch's description calls for black dots on the elytra for he says "but elytra lack the black dots as in *sanguinolenta*." Fitch's material came from Salem, New York, at the base of the Adirondacks which is probably out of the range of this species but in a district where true *scarlatina* and its varieties are common.

G. grisea of Spangberg is described as having heavy black spotting and no red flaking. Gibson on the contrary, sets off two large specimens of *irrorella* without dark markings but with heavy scarlet flaking as representatives of this species.

It is possible that the study of life histories or of more abundant material will show that this and the two preceding species are but variations of a single species which will then be called *dohrni* Stal.

6. *Gypona (Ponana) marginifrons* Fowl.

This testaceous brown species with its broad, short vertex, dark spots and lines on the anterior part of pronotum, and light elytral nervures narrowly margined with brown is a strikingly distinct and easily recognized species.

The female segment is short with acutely produced lateral angles, between which the posterior margin is obtusely angularly produced and black tipped.

The writer took this species at Dolores, Colorado, feeding on *Rhus trilobata* or a closely related species and other examples are at hand from Arizona. Gibson reports it from New Mexico, while it was described from males taken in Mexico.

Fowler places this species in his group with foliaceous vertices although his own description and figures show that it belongs in the other group, in fact, it is closely related to the species with the shortest and most rounding heads.

7. *Gypona (Ponana) resima* Fowl.

Gypona bipunctulata Gib. (not Woodw.); (?) *Gypona celata* Fowl.; (*Gypona intertexta* Uhler Mss.)

This pale cinnamon brown species can be readily separated from all others in our fauna by the short, obtusely rounding vertex with the widely separated ocelli placed just back of the rounding margin. It resembles *marginifrons* but lacks most of the pronotal markings; varying from none to two behind each eye, the outer one large. The veins are definitely brownish and the cross veins are slightly marked with fuscous. All the specimens examined from our territory have been from Georgia, Florida and Mexico and it is probably limited to a narrow gulf area in the United States.

Fowler describes *resima* without spots on pronotum but he had only female examples, while *celata* was described from females from Central America as with or without pronotal spots. *Gypona nana* Fowler which appears to be closely related is described as with or without spots.

Gibson's reference of this species to *bipunctulata* Woodw. must have been an oversight as that species was founded on the big, broad, green female of *melanota* and was so described. The writer has examined the Woodworth material (he made no types) in the Illinois Collection and found *bipunctulata* Woodw. and *nigra* Woodw. to be the sexes of the species here listed as *melanota* Spgb. and very distinct from the species described above. Gibson's material was apparently all from Georgia and Florida and the only excuse for the wide range given was probably the supposed Illinois record of Woodworth.

NOTES ON OTHER SPECIES OF GYPONA.

In working over the Mexican species in the course of this study *Gypona atitlana* Fowl. and *abjecta* Fowl. appear to be synonyms of *mystica* Spangb., a species described from Mexico but which Fowler did not recognize.

The writer has in his collection four South American species that resemble *melanota* in their color variations. *Gypona glauca* Fab. the type of the genus possesses males varying all the way from the color of the females to shining black. Some of the intermediate forms are highly ornamented with variable patterns of alternate yellow and black. *Gypona vulnerata* Walk, *viridescens* Walk. and *obsesa* Spangb. are variations of one species while *postica* Walk. appears to be the extremely dark form of the male. *Gypona thoracica* Fab., one of the largest species of the group, varies from brilliant green and smoky in the female through all changes and variations of bright red and shining black in the male.